

## CONTENTS

Preface .....	page	IX
---------------	------	----

### 1. LECTURES

P. AGOSTINI and O. GOBERT – Introduction to the characterization of femtosecond and attosecond light pulses.....	"	3
S. ATZENI – Hydrodynamic instabilities in laser-produced plasmas ..	"	35
L. F. DiMAURO and K. C. KULANDER – Strong field atomic physics	"	65
A. YA. FAENOV and T. A. PIKUZ – Recent advances in X-ray spectroscopy and X-ray imaging of laser plasmas .....	"	83
D. GIULIETTI – Shaped pre-formed plasmas for laser wake-field acceleration experiments .....	"	119
T. A. HALL – Electron beam propagation in dense materials.....	"	141
A. STAUDT, G. R. MOCKEN, M. HAAS and C. H. KEITEL – Quantum dynamics beyond the dipole approximation: From two-electron ions to more complex systems .....	"	175
V. MALKA – Laser plasma particle acceleration .....	"	191
J. P. MARANGOS – Molecules in a strong laser field .....	"	213
P. MORA – Physics of relativistic plasmas .....	"	245
F. PEGORARO, M. BORGHESI, S. V. BULANOV, F. CALIFANO, T. ZH. ESIRKEPOV, D. FARINA, T. V. LISEJKINA and M. LONTANO – Relativistic plasma solitons and acceleration of high quality proton beams.....	"	259
R. M. POTVLIEGE – Ultrashort laser pulses for atomic theorists ....	"	289
P. SALIÈRES – High-order harmonic generation and attophysics.....	"	303
V. VÉNIARD – Atoms and molecules in strong laser fields: Theoretical description .....	"	323
H. WALTHER – Quantum interaction of single atoms.....	"	341
M. ZARCONE – Nonlinear processes in anisotropic laser plasmas: The Weibel instability.....	"	355

### 2. CONTRIBUTED PAPERS

F. CECCHERINI, D. BAUER and F. CORNOLTI – Harmonic generation in two-color circularly polarized laser fields .....	"	369
E. D'HUMIÈRES , E. LEFEBVRE, S. FRITZLER and V. MALKA – Ion acceleration with high intensity lasers: PIC simulations and application to isotope production .....	"	375

I. V. KURNIN and V. V. AKULINICHEV – Enhancement of short-pulse laser-produced plasma line emission.....	"	383
J. MAURITSSON, C. DELFIN, F. LINDAU, V. LOKHNYGIN, K. OSVAY, A. PERSSON, A. SJÖGREN and C. G. WAHLSTRÖM – Particle acceleration using the Lund multi-terawatt femtosecond laser .....	"	389
H. POPESCU, F. AMIRANOFF, S. D. BATON C. ROUSSEAU, M. RABEC LE GLOAHEC, T. HALL, J. J. SANTOS, L. GREMILLET, M. KOENIG, E. MARTINOLLI, O. GUILBAUD, D. BATANI, E. PERELLI, F. SCIANITTI and T. E. COWAN – Evidence of vacuum heating and $v \times b$ acceleration in the laser-plasma interaction .....	"	397
M. M. ŠKORIĆ, LJ. NIKOLIĆ, LI BAIWEN, S. ISHIGURO and T. SATO – Relativistic laser interaction in subcritical plasmas .....	"	407
D. URSESCU, K. CASSOU, A. KLISNICK, T. KUEHL, P. NEUMAYER, P. NICKLES, D. ROS, S. BORNEIS, E. GAUL, W. GEITHNER, C. HAEFNER and P. WIEWIOR – Transient collisionally pumped X-ray laser at PHELIX.....	"	413